

patent 6,015,548 ("Siddiqui"). In view of the following comments, Applicants respectfully request reconsideration and withdrawal of these rejections.

As noted in the present specification, retinol is not particularly stable and readily decomposes. (Page 1, lines 22-26). This lack of stability and decomposition can be enhanced by the presence of UVA sunscreen agents. (Page 1, line 27 through page 2, line 1). That UVA sunscreen agents can enhance retinol decomposition is problematic, particularly in view of the fact that it could be desirable to have retinol and UVA sunscreen agents in the same compositions due to their complementary anti-aging activities. (Page 2, lines 2-9).

The claimed invention addresses such problems. The claimed invention relates to compositions containing retinol and certain camphorsulphonic acid derivatives, *wherein at least about 90% of the retinol remains in the compositions after two months at 45 °C.* Surprisingly, the claimed camphorsulphonic acid derivatives, which are UVA screening agents, do not significantly degrade retinol in the claimed compositions. Neither Tanner nor Siddiqui teaches or suggests compositions containing the claimed camphorsulphonic acid derivatives and having the claimed retinoid stability.

Tanner states that, among numerous other things, 1,4-[bis(3-methylidenecamphormethylsulphonic)] acid (col. 10, lines 3-4) and retinol (col. 15, line 11) could *optionally* be added to his base compositions. However, Tanner neither teaches nor suggests that they could be combined in a manner such that at least about 90% of the retinol would remain in a composition containing these two ingredients after two months at 45°C.

Because retinol is an optional component in Tanner and, thus, not the focus of this reference, Tanner does not address retinol stability in any way. Retinol and 1,4-[bis(3-methylidenecamphormethylsulphonic)] acid are merely two of numerous compounds and categories of compounds spanning six (6) columns which Tanner suggests could optionally

be added to his base compositions containing dibenzoylmethane sunscreens, a carrier, and surface-treated zinc. (See, col. 9, line 45 through col. 15, line 29 and claim 1). Tanner's discussion of possibly adding so many optional compounds to his compositions is so broad as to be meaningless with respect to combining two individual compounds. In other words, Tanner's disclosure is so broad that it does not provide any guidance to one skilled in the art regarding which "optional" compounds to combine or which benefits which might result from such combinations and, thus, would not lead one skilled in the art to combine retinol and the claimed camphorsulphonic acid derivatives with the expectation that at least about 90% of the retinol would remain in the composition after two months at 45°C.

Moreover, Tanner discloses compositions requiring the presence of a dibenzoylmethane sunscreen compound and identifies Parsol 1789 as being an acceptable example of this type of compound. (Col. 5, lines 46-51). Based on Tanner's disclosure, one skilled in the art would necessarily include a dibenzoylmethane compound such as Parsol 1789 in compositions. However, according to the test results on page 10 of the present specification, retinol is remarkably less stable in the presence of Parsol 1789 (see composition C) than in the claimed compositions (i.e., 30% and 27% supplementary degradation are observed in composition C in comparison with composition A (containing retinol) and composition B (containing retinol + camphorsulphonic acid compound), respectively). Thus, if one skilled in the art followed Tanner's disclosure, he would obtain a composition in which retinol readily decomposed. In other words, Tanner neither teaches nor suggests the claimed invention which relates to retinol-stable compositions.

The Office Action incorrectly asserts that Parsol 1789 is a benzophenone derivative and that claim 9 is directed to a genus of Parsol 1789, thereby undercutting Applicants' argument that one skilled in the art would not have been motivated to incorporate retinol into

Tanner's compositions because Tanner requires the presence of dibenzoylmethane compounds such as Parsol 1789. (Page 6). However, Parsol 1789 is not a benzophenone derivative. (Compare, Tab A (structure of Parsol 1789) and Tab B (structures of benzophenones)). Thus, claim 9 is not directed to a genus of Parsol 1789.

The Office Action also asserts that Tanner teaches that his compositions demonstrate unexpected photostability and provide good UVA protection, and that the surface treatment of zinc oxide renders the zinc oxide less reactive to the dibenzoylmethane derivative and the other components in the composition, thereby resulting in less chemical and physical degradation of the composition. (Page 5). However, this disclosure does not in any way mean or suggest that Tanner teaches or suggests that retinol will be stable in the presence of Parsol 1789. Tanner merely teaches that surface treating zinc oxide renders the zinc oxide less reactive to other components in his compositions. As composition C shows (page 10), Parsol 1789 degrades retinol.

With respect to claim 10, Siddiqui does not compensate for Tanner's deficiencies. Siddiqui does not relate to camphorsulphonic derivatives, nor does it suggest combining such compounds with retinol or any benefits resulting therefrom.

In view of the above, Applicants respectfully submit that the rejections under 35 U.S.C. §103 should be withdrawn.

The present application is now in condition for allowance. Early and favorable consideration is earnestly solicited.

Respectfully submitted,

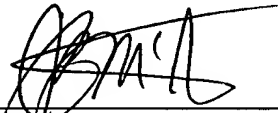
OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



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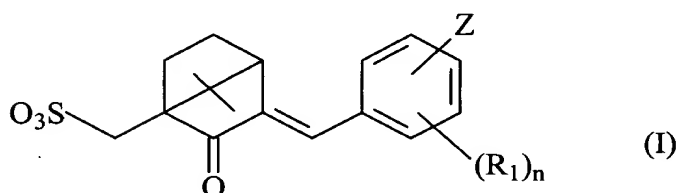
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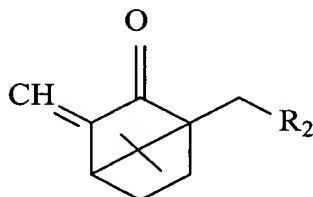
Marked-Up Copy
 Serial No: 09/978,027
 Amendment Filed on:
 July 9, 2003

1. (Amended) A composition comprising retinol and a compound of formula (I):



in which

- Z denotes a group of the formula:



- R₂ denoting -H or -SO₃H;

- n denotes 0 or an integer of greater than or equal to 1 and less than or equal to 4;

- R₁ represents one or more identical or different and linear or branched alkyl or alkoxy radicals comprising from 1 to 4 carbon atoms,

- the two methylenecamphor radicals being arranged on the phenyl nucleus in a meta or para orientation with respect to one another, each sulphonic acid functional group of which can optionally be entirely or partially neutralized by an alkali metal or alkaline earth

metal hydroxide, ammonia or an organic base, wherein at least about 90% of the retinol remains in the composition after two months at 45°C.

Function: Fragrance Ingredient

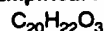
Technical/Other Names:

Butyl methacrylate (RIFM)
Butyl 2-Methyl-2-Propenoate
Methacrylic Acid, Butyl Ester
2-Propenoic Acid, 2-Methyl-, Butyl Ester

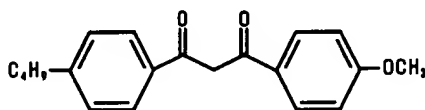
BUTYL METHOXY-DIBENZOYLMETHANE

CAS No. 70356-09-1 **EINECS No.** 274-581-6

Empirical Formula:



Definition: Butyl Methoxydibenzoylmethane is the substituted aromatic compound that conforms to the formula:



In the United States, Butyl Methoxydibenzoylmethane may be used as an active ingredient in OTC drug products. When used as an active drug ingredient, the established name is *Avobenzene*. See *Regulatory and Ingredient Use Information*, regarding the labeling names for U.S. OTC Drug Ingredients in Volume 1, Introduction, Part A.

Information Sources: EEC(VII/1-8), INN, JCLS, JSCI, JSQI, MI-12(1616), USAN

Chemical Classes: Ethers; Ketones

Functions: Sunscreen Agent; Ultraviolet Light Absorber

Reported Product Categories: Suntan Gels, Creams, and Liquids; Colognes and Toilet Waters; Perfumes; Skin Care Preparations, Misc.; Face and Neck Preparations (Excluding Shaving Preparations); Moisturizing Preparations

Technical/Other Names:

Avobenzene
4-tert-Butyl-4'-methoxydibenzoylmethane
1-(4-Tert-butylphenyl)-3-(4-Methoxyphenyl) Propane-1, 3-dione
1-[4-(1,1-Dimethylethyl)Phenyl]-3-(4-Methoxyphenyl)-1, 3-Propanedione
1,3-Propanedione, 2-butyl-2-methoxy-1,3-diphenyl-
1,3-Propanedione, 1-[4-(1,1-Dimethylethyl)Phenyl]-3-(4-Methoxyphenyl)-

Trade Names:

Eusolex 9020 (Merck KGaA)
Eusolex 9020 (Rona/EM Industries)
Parsol 1789 (Givaudan-Roure/Specialty Division)
Parsol 1789 (LaRoche)

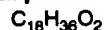
Name Mixtures:

Covabsorb (Wackherr)
Covabsorb EW (Wackherr)
Crodasome UV-A/B (Croda, Inc.)
Jurymer MB-1 (UPA) (Nihon Junyaku)
Nylonpoly UVA/B (Creations Couleurs)
Nylonpoly WL6 UVA (C.I.T.)
Nylonpoly WL12 UVA (C.I.T.)
Nylonpoly WL6 UVA-UVB (C.I.T.)
Nylonpoly WL12 UVA-UVB (C.I.T.)
Unifilter U-41 (Induchem)

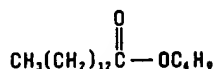
BUTYL MYRISTATE

CAS No. 110-36-1 **EINECS No.** 203-759-8

Empirical Formula:



Definition: Butyl Myristate is the ester of butyl alcohol and myristic acid. It conforms to the formula:



Information Sources: 21CFR176.210, 21CFR177.2800, CIR: [S] JACT-9(2)1990, CTFA S, JCIC, JCLS, TSCA

Chemical Class: Esters

Function: Skin-Conditioning Agent - Emollient

Technical/Other Names:

Butyl n-Tetradecanoate
Myristic Acid, Butyl Ester
Tetradecanoic Acid, Butyl Ester

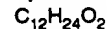
Trade Names:

AEC Butyl Myristate (A & E Connock)
Crodamol BM (Croda Oleochemicals)
Nikkol BM (Nikko)

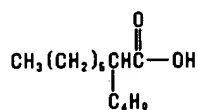
BUTYLOCTANOIC ACID

CAS No. 27610-92-0 **EINECS No.** 248-570-1

Empirical Formula:



Definition: Butyloctanoic Acid is the organic compound that conforms to the formula:



Chemical Class: Carboxylic Acids

Functions: Surfactant - Cleansing Agent; Surfactant - Emulsifying Agent

Technical/Other Names:

α -Butylcaprylic Acid
2-Butyl Octanoic Acid
Octanoic Acid, 2-Butyl-

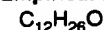
Trade Names:

Isocarb 12 (Condea Chemie)
Isocarb 12 Acid (Condea Vista)
Jaric I-12 (Jarchem)

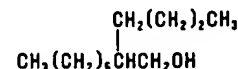
BUTYLOCTANOL

CAS No. 3913-02-8 **EINECS No.** 223-470-0

Empirical Formula:



Definition: Butyloctanol is the alcohol that conforms to the formula:



Chemical Class: Alcohols

Function: Solvent

Technical/Other Names:

2-Butyl-1-Octanol
1-Octanol, 2-Butyl-

Trade Names:

Isofol 12 (Condea Chemie)
ISOVOL 12 Alcohol (Condea Vista)
Jarcol I-12 (Jarchem)
Michel XO-150-12 iso-lauryl alcohol (Michel)

BUTYLOCTYL BEESWAX

Definition: Butyloctyl Beeswax is the ester of butyloctanol and Beeswax Acid (q.v.).

Chemical Class: Esters

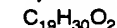
Function: Skin-Conditioning Agent - Occlusive

Trade Name:

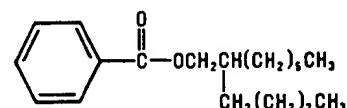
Cera Albalate 106 (Koster Keunen)

BUTYLOCTYL BENZOATE

Empirical Formula:



Definition: Butyloctyl Benzoate is the organic compound that conforms to the formula:



The inclusion of any compound in the *Dictionary and Handbook* does not indicate that use of that substance as a cosmetic ingredient complies with the laws and regulations governing such use in the United States or any other country.

Benzethonium Chloride (Cont.)

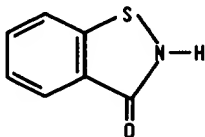
Diisobutyl Phenoxy Ethoxy Ethyl Dimethyl
Benzyl Ammonium Chloride
N,N-Dimethyl-N-[2-[2-[4-(1,1,3,3-Tetramethyl-
butyl)Phenoxy]Ethoxy]Ethyl]
Benzenemethanaminium Chloride

BENZISOTHIAZOLINONE

CAS No. **EINECS No.**
2634-33-5 220-120-9

Empirical Formula:
C₇H₅NOS

Definition: Benzisothiazolinone is the hetero-
cyclic compound that conforms to the formula:



Information Sources: 21CFR177.2600, TSCA

Chemical Classes: Amides; Heterocyclic
Compounds; Thio Compounds

Function: Preservative

Technical/Other Name:
1,2-Benzisothiazol-3(2H)-one

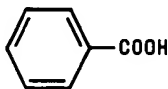
Trade Name Mixtures:
Proxel CG 10 (Zeneca)
Proxel CG 20 (Zeneca)

BENZOIC ACID

CAS No. **EINECS No.**
65-85-0 200-618-2

Empirical Formula:
C₇H₆O₂

Definition: Benzoic Acid is an aromatic acid
that conforms to the formula:



Information Sources: ARG, AUS, BP, BPC,
BRA, 21CFR150.141, 21CFR150.161,
21CFR166.40, 21CFR166.110, 21CFR175.300,
21CFR184.1021, CIR: [SQ], CTFA S, CZE, DA,
DDR, EEC(VI/1-1), EGY, FCC, FIN, HP, HUN,
IND, ITA, JAN, JCLS, JSCI, MAR, MEX,
MI-12(1122), PF, PN, POR, RIFM, SNPF, TSCA,
USAN, USD, USP XXIII, WHO, YUG

Chemical Class: Carboxylic Acids

Functions: Fragrance Ingredient; pH Adjuster;
Preservative

Reported Product Categories: Bath
Preparations, Misc.; Lipsticks; Bubble Baths;
Hair Rinses (Coloring); Cleansing Products
(Cold Creams, Cleansing Lotions, Liquids and
Pads); Mouthwashes and Breath Fresheners
(Liquids and Sprays); Skin Care Preparations,
Misc.; Skin Fresheners; Bath Soaps and
Detergents; Foundations; Body and Hand
Preparations (Excluding Shaving Preparations);
Moisturizing Preparations; Eye Shadows;
Tonics, Dressings, and Other Hair Grooming
Aids; Aftershave Lotions; Indoor Tanning
Preparations; Eye Makeup Removers; Blushers
(All types); Manicuring Preparations, Misc.;
Shampoos (Non-coloring); Face Powders;
Paste Masks (Mud Packs); Hair Conditioners

Technical/Other Names:

Benzenecarboxylic Acid
Benzeneformic Acid
Benzenemethanoic Acid
Benzoic acid (RIFM)
Carboxybenzene
Dracyclic Acid
Phenylcarboxylic Acid
Phenylformic Acid

Trade Names:

Benzoic Acid USP/FCC Fine Granular (Jeen)
Unisept BZA (Universal Preserv-A-Chem)

Trade Name Mixtures:

Bactecar 125S (Phytocos)
Euxyl K 702 (Schulke & Mayr)
Germazide MPB (Collaborative Labs)

BENZOIC ACID/PHTHALIC ANHYDRIDE/PENTAERYTHRITOL/NEOPENTYL GLYCOL/PALMITIC ACID COPOLYMER

Definition: Benzoic Acid/Phthalic Anhydride/
Pentaerythritol/Neopentyl Glycol/Palmitic Acid
Copolymer is a mixed ester of benzoic acid and
palmitic acid with a polymer of phthalic
anhydride, pentaerythritol and neopentyl glycol
monomers.

Chemical Class: Synthetic Polymers

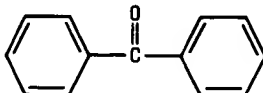
Function: Film Former

BENZOPHENONE

CAS No.: 119-61-9

Empirical Formula:
C₁₃H₁₀O

Definition: Benzophenone is the organic
compound that conforms to the formula:



Benzophenone-2

Information Sources: 21CFR172.515,
MI-12(1129), RIFM

Chemical Class: Benzophenones

Functions: Fragrance Ingredient; Ultraviolet
Light Absorber

Technical/Other Names:

Benzene, Benzoyl-
Benzophenone (RIFM)
Benzoylbenzene
Diphenyl Ketone
Diphenylmethanone
Methanone, Diphenyl-
α-Oxodiphenylmethane
α-Oxoditane
Phenyl Ketone

Trade Name Mixture:

Nonychosine V (Exsymol)

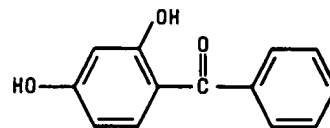
BENZOPHENONE-1

CAS No. **EINECS No.**
131-56-6 205-029-4

Empirical Formula:

C₁₃H₁₀O₃

Definition: Benzophenone-1 is a benzo-
phenone derivative that conforms to the
formula:



Information Sources: 21CFR701.3, CIR: [S]
JACT-2(5)1983, CTFA S, JCIC, JCLS, JSQI,
MI-12(1138), TSCA

Chemical Class: Benzophenones

Function: Ultraviolet Light Absorber

Reported Product Categories: Nail Polish and
Enamels; Basecoats and Undercoats;
Manicuring Preparations, Misc.; Nail Polish and
Enamel Removers; Hair Preparations
(Non-coloring), Misc.

Technical/Other Names:

Benzoeresorcinol
4-Benzoyl Resorcinol
2,4-Dihydroxybenzophenone
(2,4-Dihydroxyphenyl)Phenylmethanone
Methanone, (2,4-Dihydroxyphenyl)Phenyl-

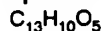
Trade Names:

DHBP: Quinsorb 010 (Enterprise)
Uvasorb 20H/G (3V Inc.)
Uvinul 400 (BASF)

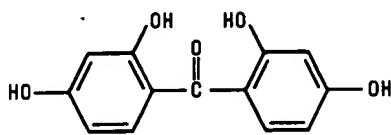
BENZOPHENONE-2

CAS No. **EINECS No.**
131-55-5 205-028-9

The inclusion of any compound in the *Dictionary and Handbook* does not indicate that use of that substance as a cosmetic ingredient complies with the laws and regulations governing such use in the United States or any other country.

Empirical Formula:

Definition: Benzophenone-2 is a benzophenone derivative that conforms to the formula:



Information Sources: CIR: [S] JACT-2(5)1983, CTFA S, JCIC, JCLS, JSQI, RIFM, TSCA

Chemical Class: Benzophenones

Functions: Fragrance Ingredient; Ultraviolet Light Absorber

Reported Product Categories: Colognes and Toilet Waters; Perfumes; Aftershave Lotions; Fragrance Preparations, Misc.; Skin Care Preparations, Misc.; Skin Fresheners; Shampoos (Non-coloring); Shaving Preparations, Misc.; Cleansing Products (Cold Creams, Cleansing Lotions, Liquids and Pads); Bath Preparations, Misc.; Bubble Baths; Body and Hand Preparations (Excluding Shaving Preparations); Hair Preparations (Non-coloring), Misc.; Lipsticks; Hair Conditioners

Technical/Other Names:

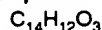
Bis(2,4-Dihydroxyphenyl)Methanone
Methanone, Bis(2,4-Dihydroxyphenyl)-
2,2',4,4'-Tetrahydroxybenzophenone
2,2',4,4'-Tetrahydroxybenzophenone (RIFM)

Trade Names:

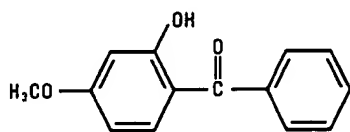
AEC Benzophenone-2 (A & E Connock)
Helisorb-10 (Norquay)
Protaphenone-2 (Protameen)
Uvinul D-50 (BASF)

BENZOPHENONE-3

CAS No. EINECS No.
131-57-7 205-031-5

Empirical Formula:

Definition: Benzophenone-3 is a benzophenone derivative that conforms to the formula:



In the United States, Benzophenone-3 may be used as an active ingredient in OTC drug products. When used as an active drug ingredient, the established name for Benzophenone-3 is *Oxybenzone*. See *Regulatory and Ingredient Use Information*, regarding the

labeling names for U.S. OTC Drug Ingredients in Volume 1, Introduction, Part A.

Information Sources: 21CFR177.1010, CIR: [S] JACT-2(5)1983, CTFA S, EEC(VII/1-4), INN, JCLS, JSQI, MAR, MI-12(7088), OTC-I-SU, TSCA, USAN, USP XXIII

Chemical Class: Benzophenones

Functions: Sunscreen Agent; Ultraviolet Light Absorber

Reported Product Categories: Moisturizing Preparations; Suntan Gels, Creams, and Liquids; Lipsticks; Foundations; Hair Conditioners; Body and Hand Preparations (Excluding Shaving Preparations); Tonics, Dressings, and Other Hair Grooming Aids; Skin Care Preparations, Misc.; Face and Neck Preparations (Excluding Shaving Preparations); Hair Sprays (Aerosol Fixatives); Perfumes; Nail Polish and Enamels; Bath Oils, Tablets, and Salts; Suntan Preparations, Misc.; Hair Coloring Preparations, Misc.; Colognes and Toilet Waters; Indoor Tanning Preparations; Aftershave Lotions; Hair Wave Sets; Shampoos (Non-coloring); Fragrance Preparations, Misc.; Hair Preparations (Non-coloring), Misc.; Makeup Preparations (Not eye), Misc.; Makeup Bases; Cleansing Products (Cold Creams, Cleansing Lotions, Liquids and Pads)

Technical/Other Names:

2-Benzoyl-5-methoxyphenol
2-Hydroxy-4-Methoxybenzophenone
(2-Hydroxy-4-Methoxyphenyl)Phenylmethanone
Methanone, (2-Hydroxy-4-Methoxyphenyl)Phenyl-
Oxybenzone

Trade Names:

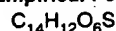
Escalol 567 (ISP Van Dyk)
Eusolex 4360 (Rona/EM Industries)
EUSORB 228 (Aceto)
Jeescreen Benzophenone 3 (Jeen)
Neo Heliopan, Type BB (Haarmann & Reimer)
Protaphenone-3 (Protameen)
Spectra-Sorb UV-9 (American Cyanamid/Fine Chemicals)
Uvasorb MET/C (3V Inc.)
Uvinul M-40 (BASF)

Trade Name Mixtures:

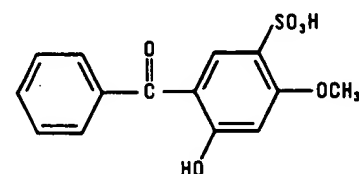
Catezomes UV-III (Collaborative Labs)
Suncaps 797 (SunSmart)
Suncaps 903 (SunSmart)

BENZOPHENONE-4

CAS No. EINECS No.
4065-45-6 223-772-2

Empirical Formula:

Definition: Benzophenone-4 is a benzophenone derivative that conforms to the formula:



In the United States, Benzophenone-4 may be used as an active ingredient in OTC drug products. When used as an active drug ingredient, the established name for Benzophenone-4 is *Sulisobenzene*. See *Regulatory and Ingredient Use Information*, regarding the labeling names for U.S. OTC Drug Ingredients in Volume 1, Introduction, Part A.

Information Sources: CIR: [S] JACT-2(5)1983, CTFA S, EEC(VII/2-17), INN, JCIC, JCLS, JSQI, MAR, MI-12(9157), OTC-I-SU, TSCA, USAN

Chemical Class: Benzophenones

Functions: Sunscreen Agent; Ultraviolet Light Absorber

Reported Product Categories: Tonics, Dressings, and Other Hair Grooming Aids; Shampoos (Non-coloring); Hair Conditioners; Hair Preparations (Non-coloring), Misc.; Cleansing Products (Cold Creams, Cleansing Lotions, Liquids and Pads); Hair Sprays (Aerosol Fixatives); Moisturizing Preparations; Body and Hand Preparations (Excluding Shaving Preparations); Bath Preparations, Misc.; Bath Soaps and Detergents; Skin Fresheners; Skin Care Preparations, Misc.; Hair Wave Sets; Bath Oils, Tablets, and Salts; Aftershave Lotions; Personal Cleanliness Products, Misc.; Hair Rinses (Non-coloring); Bubble Baths; Face and Neck Preparations (Excluding Shaving Preparations); Colognes and Toilet Waters; Fragrance Preparations, Misc.

Technical/Other Names:

Benzenesulfonic Acid, 5-Benzoyl-4-Hydroxy-2-Methoxy-
5-Benzoyl-4-Hydroxy-2-Methoxybenesulfonic Acid
5-Benzoyl-4-Hydroxy-2-Methoxybenzene Sulfonic Acid
2-Hydroxy-4-Methoxybenzophenone-5-Sulfonic Acid
2-Hydroxy-4-methoxybenzophenone-5-sulfonic Acid (Trihydrate)
1-Phenol-4-Sulfonic Acid, 2-Benzoyl-5-Methoxy-
Sulisobenzene

Trade Names:

Escalol 577 (ISP Van Dyk)
Jeescreen Benzophenone 4 (Jeen)
Protaphenone-4 (Protameen)

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Benzophenone-4 (Cont.)

Uvasorb S5 (3V Inc.)
Uvinul MS-40 (BASF)

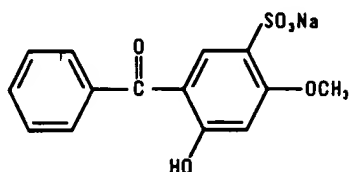
Trade Name Mixtures:
Aceromine (Greentech)
Rosamine (Greentech)

BENZOPHENONE-5

CAS No.: 6628-37-1

Empirical Formula:
 $C_{14}H_{12}O_6S \cdot Na$

Definition: Benzophenone-5 is the sodium salt of Benzophenone-4 (q.v.) and conforms to the formula:



Information Sources: CIR: [S] JACT-2(5)1983, EEC(VII/2-17), JCLS, JSQI, JSQI

Chemical Class: Benzophenones

Function: Ultraviolet Light Absorber

Reported Product Categories: Body and Hand Preparations (Excluding Shaving Preparations); Skin Care Preparations, Misc.; Skin Fresheners

Technical/Other Names:

Benzenesulfonic Acid, 5-Benzoyl-4-Hydroxy-2-Methoxy-, Monosodium Salt
2-Hydroxy-4-Methoxybenzophenone-5-Sulfonic Acid, Sodium Salt
Sodium Hydroxymethoxybenzophenone Sulfonate
Sulisobenzene Sodium

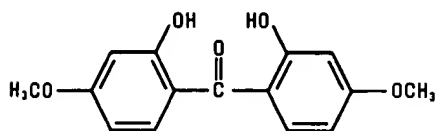
BENZOPHENONE-6

CAS No. 131-54-4 **EINECS No.** 205-027-3

Empirical Formula:

$C_{15}H_{14}O_5$

Definition: Benzophenone-6 is a benzophenone derivative that conforms to the formula:



Information Sources: CIR: [S] JACT-2(5)1983, CTFA S, JCIC, JCLS, JSQI, MI-12(1130), RIFM, TSCA

Chemical Class: Benzophenones

Functions: Fragrance Ingredient; Ultraviolet Light Absorber

Reported Product Category: Perfumes

Technical/Other Names:

Bis(2-Hydroxy-4-Methoxyphenyl)Methanone
Dihydroxy Dimethoxy Benzophenone
2,2'-Dihydroxy-4,4'-Dimethoxybenzophenone
2,2'-Dihydroxy-4,4'-dimethoxybenzophenone (RIFM)
Methanone, Bis(2-Hydroxy-4-Methoxyphenyl)-

Trade Name:

Helisorb 11 (Norquay)

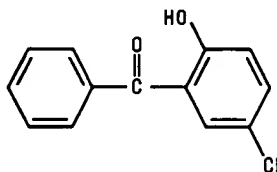
BENZOPHENONE-7

CAS No. 85-19-8 **EINECS No.** 201-592-5

Empirical Formula:

$C_{13}H_9O_2Cl$

Definition: Benzophenone-7 is a benzophenone derivative that conforms to the formula:



Chemical Class: Benzophenones

Function: Ultraviolet Light Absorber

Technical/Other Names:

2-Benzoyl-4-Chlorophenol
5-Chloro-2-Hydroxybenzophenone
(5-Chloro-2-Hydroxyphenyl)Phenylmethanone
2-Hydroxy-5-Chlorobenzophenone
Methanone, (5-Chloro-2-Hydroxyphenyl)Phenyl-

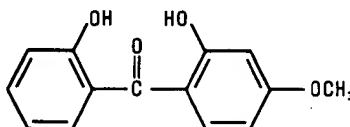
BENZOPHENONE-8

CAS No. 131-53-3 **EINECS No.** 205-026-8

Empirical Formula:

$C_{14}H_{12}O_4$

Definition: Benzophenone-8 is a benzophenone derivative that conforms to the formula:



Benzophenone-9

In the United States, Benzophenone-8 may be used as an active ingredient in OTC drug products. When used as an active drug ingredient, the established name for Benzophenone-8 is *Dioxybenzone*. See "Regulatory and Ingredient Use Information," regarding the labeling names for U.S. OTC Drug Ingredients in Volume 1, Introduction, Part A.

Information Sources: CIR: [S] JACT-2(5)1983, CTFA S, INN, MAR, MI-12(3357), OTC-I-SU, TSCA, USAN, USP XXIII

Chemical Class: Benzophenones

Functions: Sunscreen Agent; Ultraviolet Light Absorber

Technical/Other Names:

2,2'-Dihydroxy-4-Methoxybenzophenone
Dioxybenzon
Dioxybenzone
(2-Hydroxy-4-Methoxyphenyl)(2-Hydroxyphenyl)Methanone
Methanone, (2-Hydroxy-4-Methoxyphenyl)(2-Hydroxyphenyl)-

Trade Name:

Spectra-Sorb UV-24 (American Cyanamid/
Fine Chemicals)

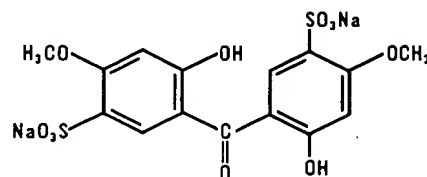
BENZOPHENONE-9

CAS No. 76656-36-5 **EINECS No.** 278-520-4

Empirical Formula:

$C_{15}H_{14}O_{11}S_2 \cdot 2Na$

Definition: Benzophenone-9 is a benzophenone derivative that conforms to the formula:



Information Sources: CIR: [S] JACT-2(5)1983, CTFA S, JCIC, JCLS, JSQI, TSCA

Chemical Class: Benzophenones

Function: Ultraviolet Light Absorber

Reported Product Categories: Bath Preparations, Misc.; Bath Soaps and Detergents; Bubble Baths; Colognes and Toilet Waters; Shampoos (Non-coloring); Aftershave Lotions; Moisturizing Preparations

Technical/Other Names:

Benzenesulfonic Acid, 3,3'-Carbonylbis (4-Hydroxy-6-Methoxy- Disodium Salt
Disodium 2,2'-Dihydroxy-4,4'-Dimethoxy-5,5'-Disulfobenzophenone

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Trade Names:

AEC Benzophenone-9 (A & E Connock)
Uvinul DS-49 (BASF)

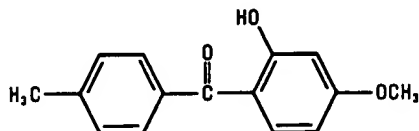
BENZOPHENONE-10

CAS No. 1641-17-4
EINECS No. 216-688-2

Empirical Formula:

$C_{15}H_{14}O_3$

Definition: Benzophenone-10 is a benzophenone derivative that conforms to the formula:



Information Sources: BAN, INN, MAR, MI-12(6255)

Chemical Class: Benzophenones

Function: Ultraviolet Light Absorber

Technical/Other Names:

2-Hydroxy-4-Methoxy-4'-Methylbenzophenone
(2-Hydroxy-4-Methoxyphenyl) (4-Methylphenyl) Methanone
Methanone, (2-Hydroxy-4-Methoxyphenyl) (4-Methylphenyl)-
Mexenone

BENZOPHENONE-11

CAS No.: 1341-54-4

Definition: Benzophenone-11 is a mixture of Benzophenone-6 (q.v.), Benzophenone-2 (q.v.) and other tetra-substituted benzophenone materials.

Information Sources: CIR: [S] JACT-2(5)1983, CTFA S

Chemical Class: Benzophenones

Function: Ultraviolet Light Absorber

Reported Product Categories: Colognes and Toilet Waters; Perfumes

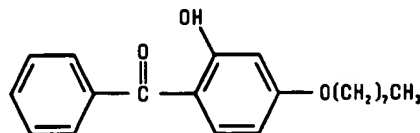
BENZOPHENONE-12

CAS No. 1843-05-6
EINECS No. 217-421-2

Empirical Formula:

$C_{21}H_{26}O_3$

Definition: Benzophenone-12 is a benzophenone derivative that conforms to the formula:



Information Sources: 21CFR178.2010, INN, MAR, MI-12(6838), TSCA, USAN

Chemical Class: Benzophenones

Function: Ultraviolet Light Absorber

Technical/Other Names:

2-Benzoyl-5-Octyloxyphenol
2-Hydroxy-4-(Octyloxy)Benzophenone
[2-Hydroxy-4-(Octyloxy)Phenyl]Phenylmethanone
Methanone, [2-Hydroxy-4-(Octyloxy)Phenyl]Phenyl-
Octabenzene
UV Absorber HOB

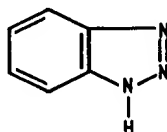
BENZOTRIAZOLE

CAS No. 95-14-7
EINECS No. 202-394-1

Empirical Formula:

$C_8H_5N_3$

Definition: Benzotriazole is the heterocyclic compound that conforms to the formula:



Information Sources: 21CFR178.3910, MI-12(1140), TSCA

Chemical Class: Heterocyclic Compounds

Function: Preservative

Technical/Other Names:

1,2-Aminoazophenylene
Benzene Azimide
2,3-Diazaindole
1,2,3-Triazaindene

Trade Name:

Preventol CI 8-100 (Bayer AG)

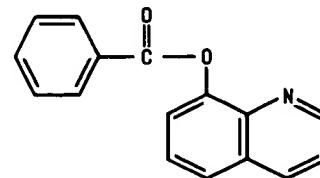
BENZOXIQUINE

CAS No. 86-75-9
EINECS No. 201-697-6

Empirical Formula:

$C_{16}H_{11}NO_2$

Definition: Benzoxiquine is the ester of Oxyquinoline (q.v.) and benzoic acid that conforms to the formula:



Information Sources: 21CFR310.545, CIR: [I] IJT-16(Suppl. 1)1997, CTFA D, INN, MI-12(1143), TSCA, USAN

Chemical Classes: Esters; Heterocyclic Compounds

Function: Cosmetic Biocide

Technical/Other Names:

Benzoxyline
Benzoxiquine
8-(Benzoylox)Quinoline
Dioxyline
8-Hydroxyquinoline Benzoate (Ester)
Oxyquinoline Benzoate
8-Quinololin Benzoate (Ester)
Quinolyl Benzoate

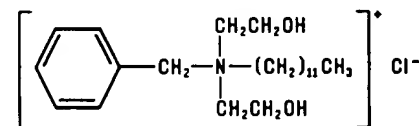
BENZOXONIUM CHLORIDE

CAS No. 19379-90-9
EINECS No. 243-008-1

Empirical Formula:

$C_{23}H_{42}NO_2 \cdot Cl$

Definition: Benzoxonium Chloride is the quaternary ammonium compound that conforms to the formula:



Information Sources: INN, MI-12(1144)

Chemical Class: Quaternary Ammonium Compounds

Function: Cosmetic Biocide

Technical/Other Names:

Benzenemethanaminium, N-Dodecyl-N, N-Bis(2-Hydroxyethyl)-, Chloride
Benzyl dodecyl diethanol ammonium Chloride
Dodecyl (Benzyl) Diethanol ammonium Chloride
Laurylbis (2-Hydroxyethyl) Benzyl ammonium Chloride
1,2,3-Propanetricarboxylic Acid, 2-Hydroxy-, Calcium Salt

Trade Name:

Benzyl dodecyl bis(2-hydroxyethyl) ammonium chloride (Basotherm)

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